Illinois Commerce Commission (ICC)
Beneficial Electrification Workshops

Wednesday, December 15, 2021 Meeting
10:00 am – 3:00 pm
Teleconference

Meeting Materials:

- Posted on the ICC Beneficial Electrification Workshops webpage: https://icc.illinois.gov/informal-processes/beneficial-electrification-workshops-2021-2022
  - ICC Beneficial Electrification Workshop Update – Facilitator Presentation
  - Trucking Perspective: North American Council for Freight Efficiency
  - Government Perspective on Electric Vehicle Fleets: City of Chicago
  - Life Cycle Emissions of Different Vehicle/Fuel Technology Pathways: University of Illinois at Chicago
  - The Road to Clean Air – Benefits of a Nationwide Transition to Electric Vehicles: American Lung Association
  - Electrifying Fleets: eIQ Mobility
  - Trucking Task Force Recap: Advanced Energy Group
  - Non-Residential Rate Considerations: Alliance for Transportation Electrification
  - Community Impacts: Little Village Environmental Justice Organization and Warehouse Workers for Justice

Opening and introductions

Celia Johnson, Facilitator

The purpose of the December 15th meeting:

1. To provide an update on the ICC BE Workshop Plan, including an overview of the Participation Strategy;
2. To educate Workshop participants on unique fleet considerations and discuss opportunities for utility involvement and support for fleet electrification;
3. To discuss rate structures and incentive options for nonresidential utility customers; and
4. To discuss health and pollution impacts of fleets.

Update on ICC Beneficial Electrification Workshops

Celia Johnson, Facilitator

Overview of Workshop Plan Changes (in response to feedback received in November)

- **Background:**
  - Following the November 3rd workshop, feedback was due on the draft Workshop Plan by November 17th. Feedback is posted on the ICC website and a new Appendix A was added to the Workshop Plan to include submitted questions. Due to time constraints, ICC workshops will not be able to cover all requested topics or questions the following will be prioritized (Topics referenced in the Illinois Electric Vehicle Act and Presentations on ideas/recommendations submitted by interested participants.)
  - Topic focused meetings were re-arranged based on feedback, fleet meetings will be back to back, residential meeting is moved to early February, additional

meeting is on February 4th for idea presentations. Discussion topics referenced in the Workshop Plan are subject to change as needed.

- **Workplan Plan Update**:
  - Topic focused Workshop Meetings: Introduction to Process, Fleets part 1 (private and gov't fleets), Fleets part 2 (public transit and school bus fleets), other considerations, additional idea presentations, residential customers and equity/environmental justice, Charging; and final follow up meeting (if needed.)
  - Idea presentations will be scheduled throughout Workshop meetings.
  - In addition to a specific meeting focus, equity and environmental Justice considerations are expected to be discussed at all ICC Workshop meetings.

- **Proposed ideas:**
  - Workshop participants were invited to submit: Recommendations for beneficial electrification investment, incentives, program designs and other ideas that the utilities may consider and include in their beneficial electrification plans. Templates were due November 24th; more than 45 ideas were submitted. Submittals are posted on the ICC BE Workshop website. Future Workshop meeting will prioritize presentations on ideas and recommendations.

- **Responses to November 3rd Questions:**
  - Request for Feedback on three questions; see website.
  - Feedback is posted on the ICC BE Workshop website. Follow-up discussion will be scheduled at a future meeting; anticipated in the "Other Considerations' meeting in January 26, since there is not consensus on answers to these questions.

- **Workshop Participation Strategy:**
  - The purpose is to identify strategies of the Workshop Facilitator to include input and participation from stakeholders representing a variety of perspectives in ICC Beneficial Electrification Workshops.
  - In October, ICC Staff requested feedback from Workshop Participants on how Workshops can include stakeholders representing environmental justice and low-income communities. Feedback was received from more than 15 organizations. Due to time and resource constraints, not all recommendations can be implemented in the Workshop process; all Workshop activities will be virtual.
  - The actions and strategies described in the Participation document are designed to encourage broad participation. Participation strategy includes: Providing Explanatory Materials, Using Accessible Language, Sharing Information in Advance of Meetings, Posting Meeting Recordings, Offering Multiple Opportunities for Input, Holding Equity- Focused Meetings, Offering Co-Hosted Meetings and Conducting Outreach to Interested Organizations.

Fleet Electrification Panel

Yann Kulp, eIQ Mobility

- **Introduction to fleets:**
  - We are the number one provider of fleet electrification assessment solutions for utilities, OEMs and fleets. Deep experience with utilities, telecom, delivery, pharma, food and beverage, cities, states, universities, K-12, and other fleets.

- There are dozens of major customers, 150,000 plus vehicles, four million trips, and 350 million miles. Fleets are a huge industry that is ready for electrification. Most fleets are small and medium sized. Auto manufacturers invest $250 billion in EVs for the US.

- **Findings across the country on unique considerations of fleet owners; educational needs:**
  - Illinois and Midwest have very strong Fleet EV opportunities. 67% of Passenger Vehicles are Economically Feasible. Fleet Electrification is a very complex journey. Pick location, EVs, chargers, vendors, define costs, emissions and incentives. Finance and deploy assets. Electric Vehicles and charging infrastructure. Operate and optimize the new electric fleet and facilities. Learn from pilots, create a fleet-wide strategy and scale across operations.
  - What answers fleets need to make decisions: What Electric Vehicles? (fleet manager), what chargers and how many? (facility and energy managers), what will it cost? (finance manager), will it reduce emissions? (sustainability manager).

- **Key obstacles for fleets:**
  - Time: fleet managers are understaffed and have little time to investigate. Learn and plan for a new energy. Focus on immediate issues. Knowledge: Fleet managers are experts in gas and diesel. EV and kWh is totally new. Smaller fleets have less access to resources to assist from vendors, energy providers.
  - Incentive and motivation: Many small and medium fleets are under the radar and have little policy or sustainability pressure on zero-emissions. Risk: Fleets focus on maintain current operations and minimizing disruptions. Very low appetite for risk. Capital: Many fleets have less access to capital, tax, skills and ability to leverage incentives.

- **Lessons Learned for Utilities and Public Utility Commissions:**
  - Leverage data that fleet customers already have. Give fleets the answers they need; total cost of ownership, EV and EVSE selection facility load profiles, emissions. Make it simple, fast and repeatable to build a 10 year long relationship.
  - Consider needs of smaller fleets; small communities and schools, family owned. Do not ignore the fleet decision process and focus only on incentives, rates and make ready. Do not focus only on certain fleet applications, such as school or transit buses. Look at municipal corporate, hospitals, delivery and other fleets. Do not provide support once and ignore the everchanging needs of fleets, and new EV models, incentives. Do not wait until 'it gets better' such as cheaper EVs, more public charging Now is the time to help fleets.

Discussion

- Q: What was the timing on when this analysis was done? What did it assume about technology improvements going forward?
  - A: It was done in September 2021. The dynamics change every few weeks. For example, in January GM will be announcing the specifications of the Silverado EV pickup. That is going to change these numbers. If the bill back better bill is voted it will have provisions in there. We constantly analyze this based on the latest variables.

- Q: Is this graph still considering just light duty fleet vehicles (same as previously mentioned)?
    - A: No, the graph covers the full spectrum of vehicles.
- Q: Are there any plans to implement this technology into Agricultural sector. Tractors, combines?
    - A: Reach out to me and we can talk about it more. I do not have an answer for it right now.
- Q: You mentioned in passing the possibility of fleet vehicles being parked at employees' homes. Can you talk about how fleet vehicles that are assigned to employees and typically parked at the employees' homes impacts fleet electrification assessments?
    - A: They personally can park it at their homes. We need to ensure that they have the capacity to take a charger. They will have chargers at their homes, which is feasible.
- Q: Did the public sector fleet category include transit agencies? What would the public sector economic feasibility look like without transit vehicles?
    - A: We have a lot of school buses but not a lot of transit vehicles. I don't think we are knowledgeable of that particular sector. We have a lot municipal assessments across Chicago and the Midwest. The feasibility of municipal vehicles is huge outside of transit such as pool vehicles and sedans.

Trucking Perspective: North American Council for Fleet Efficiency and Advanced Energy Group

Dave Schaller, North American Council for Fleet Efficiency (NACFE)

- **North American Council for Freight Efficiency:**
    - Unbiased, nonprofit organization with a mission to double freight efficiency, scale available technologies, guide future change and Run on Less demonstrations. We work with all stakeholders in the industry and our primary focus are Tractor-trailers.

- **Utilities and Truck Electrification:**
    - Challenges are it is difficult to forecast MD and HD Electrification (loads and locations). Most truck fleets do not currently warrant an account manager. Just as utility companies vary widely in operations, so do truck fleets.
    - Opportunities are working with truck dealers who themselves may need charging systems. Investigating the large industrial parks and distribution centers in your area. Research ports including water, air and rail as potential, join your state trucking association, help fleets with make ready funding and grants for infrastructure. Also trucking is a relationship business, so start one as soon as possible.

- **Truck Electrification Case Studies:**
    - Every two years NACFE conducts a benchmarking of industry leaders in trucking efficiency with real fleets carrying freight on their own terms. Run on Less (as in less diesel fuel). For 2021, the focus was on 13 different real world battery electric trucks. Each truck was equipped with telematics reporting back to NACFE so we could monitor actual operations on real freight routes.
    - Tractors do not get up to the temperatures most diesel trucks do when they are pulling a load down the highway. This makes them have a phenomenally good application. We have three regional haul applicators ready. There are classic

applications that are already served by battery electric trucks. Run on Less electric videos show real time case studies as a way to learn about electric trucks.

- **Preliminary findings:**
  - Adopters of electric vehicles are validating an acceptable cost of ownership in urban medium-duty vans and trucks, tractors and short regional haul applications. EV adoptions occurring throughout North America, but for longer heavy-duty semi-trucks use has been somewhat limited to cost differences. Benefits to EVs, (quiet operation and reliability) as well as challenges (infrastructure and range). EV truck ecosystem inertia is in its early stages with many solutions.
  - Adoption will take decades as we need to develop standards in the areas of charging, repair, maintenance and training. There's a huge demand for real world information on EVS in applications and charging infrastructure. The mix of startups and traditional truck OEMs and component manufacturers is expediting the development of creative and practical. Early adopters of EVs are having an influence on improving trucks and infrastructure. Operational challenges for example longer charging times, which these fleets are working to mitigate.

- **Electrification Waves:**
  - Electrification waves drive Run On Less- Electric scope; Forklifts, Yard Tractors, MD Urban Delivery, Drayage, Regional Haul Tractors, Long Haul Tractors.

- **Electric Vehicle Supply Equipment:**
  - Size, location, connectors, interoperability (OCPP= Open Charge Point Protocol), Support, Software for charge management, Utility Interface, TOU: Time of Use charges.

- **Electric Trucks:**
  - Collaboration, Fleets, OEMs, Suppliers, Dealerships (sales/service), government, charging system suppliers, utility companies.

Discussion

- Q: Have you heard of good EV vehicle repair and maintenance standard training yet?
  - A: I would say the best you can see is connected to the Lights Program, in California. They have two community colleges that have set up programs to teach people how to maintain electric vehicles. Companies such as Penske, have tight relationships with OEMs and have excellent programs in plan.
- Q: Municipal question. Plowing and sporadic needs are going to be our hurdles. Weather affects our usage. Is this factored in any of your data or questionnaires?
  - A: Those are not the best applications for electrification right now because of snowstorms if you are in the Chicago area and upper Midwest because you don't downtime when you are recharging. If you are in a mandate to change, an electric cell makes more sense for a charge than a battery electric cell.
- Q: There appears to be a consistent reliance on the utilities for power supply to the various EV fleet scenarios. IPPs in the storage & solar industries have extensive capabilities to serve these loads.
  - A: I see a very definitive opportunity for micro grids and fleets, that distribution centers have an enormous amount of real estate for putting up solar panels, that

can use wind. Battery storage is becoming a big deal, which gets as much power as possible, for as low cost as possible. There are times when utility companies pay customers to get power of the grid. There are some very unique opportunities there and we have a lot to learn here.

- Q: Considering off-road applications like drayage. Have any of the speakers' considered opportunities for electrifying small-gasoline engines, particularly in the landscape/ag sectors?
    - A: Companies like Chevron have been working on small gasoline engines for landscaping while other battery manufacturers like our local AllCell have been working to electrify golf carts, motorcycles etc. Typically, these smaller engines require battery technology specific to their needs for duration, charging, and operations.

Takeaways from Advanced Energy Group Trucking Task Force

Jack Jordan, Advanced Energy Group

- **Advanced Energy Group (AEG):**
    - Engagement platform working to accelerate climate and equity in Chicago, New York, Washington DC, Boston and the Caribbean. Identify the most pressing obstacle then develop a solution. Volunteer task forces then work for 12 months to achieve goals.

- **Summary:**
    - Drayage Freight in Chicago offers great opportunity for electrification. Application aligns with limitations of electrification. Huge health and air quality benefits for communities near intermodal yards. Investments in local economy and small businesses. Fleet engagement and education may be the biggest challenge.
    - Understanding specifics of trucking operations is essential especially for policymakers. Fleet engagement was a big focus of AEG Trucking Task Force with limited success. Utility considerations: Develop outreach plan and points of contact for small fleet operations. Prioritize investment in SW and SE sides to alleviate charging deserts and prepare for electrification specifically for drayage. Long term vision is needed to address structural issues.

- **Chicago is still a portage**:
    - Intermodal facilities require lifts and transfers much like historic Chicago Portage. Freight system has relied on sacrifice of marginalized communities such as native people for the 1816 Treaty of St. Louis and I&M Canal. Black Jewish and other working-class communities for Congress Expressway (I-290) and Dan Ryan (1-94).
    - Latinx and other working-class communities near intermodal for past decades. Some people have always been deemed expandable for the success of the freight system in Chicago. This cannot continue as we move toward a more equitable system. Freight electrification can be our chance to do better. Yet in some ways this is already happening with EV infrastructure. Most of Chicago's accessible electric charging stations are in mostly White areas.

- **The Illinois Clean Truck Fleet Forum was created**:
    - Goal is to create a platform for public fleets, private fleets, and associated stakeholders to collectively discuss barriers and opportunities to fleet

electrification in Illinois. Takeaways are that electrification must focus on application. Transitioning to EVs requires organizational buy-in from fleets both public and private. Technology and incentives are rapidly evolving and difficult to keep track of. Fleet engagement is difficult.

- **Opportunity for Drayage Freight:**
  - The definition of drayage is that drayage refers to the process of transporting goods over short distances. It includes the trucking of containerized cargo from one port to another or from a port to a railyard. The glue for drayage freight is that it holds the intermodal system together. There is great opportunity based on application. There are projected cost savings in near-term with total cost of ownership.
  - Drayage firms often have older trucks with worse emissions. It is more likely to drive through neighborhoods between intermodals. The challenge for fleet engagement and education is that fleet engagement was a challenge for AEG Trucking Task Force. There are limited results despite high focus on outreach and aid of Illinois Trucking Association. Few Fleet Managers have time in day to day schedule to participate. Smaller operations are hardest to reach and least likely to have funding. Zoom and online meetings may be a challenge. Fleet engagement is essential for electrification.
  - During Fleet Forum, participants from ComEd emphasized the need for early outreach from fleets for electrification projects. Adding chargers and trucks takes time and may require substation upgrades and added costs. Better data is needed on drayage freight and local deliveries.
  - Drayage data in other cities has been referred to as a "black hole." Fine-grained data could help us lessen traffic through neighborhoods reducing idling and better understand specific fleet experiences.

- **Utility Considerations for Beneficial Electrification:**
  - Direct outreach to smaller fleets, not just large customers. Prioritize upgrades for SW/SE Side. Eye on technology leads to wireless charging, and logistics innovations. Collaboration with intermodal yards, logistics companies, Port of Chicago, city agencies, unions, and local environmental advocacy groups.
  - Same can be done downstate with other intermodals/truck depots. Long term vision is essential for dealing with structural inequities. The choices we make today will impact generations to come.

Government Perspective: City of Chicago

City of Chicago Presenters: Kevin Campbell, Manager of Fleet Services and Automotive Procurement; and Jared Policicchio, Office of the Mayor

- **Chicago's Mobility Roadmap:**
  - Published March 2019. Provides a vision that incorporates new mobility services and technologies into Chicago's transportation network. Identifies immediate actions and long-term strategies to provide a reliable equitable and environmentally sustainable transportation ecosystem.
  - Guiding principles: A transportation system that is safe for all users. Mobility choices that are accessible, equitable, affordable and non-discriminatory. Economic development that is inclusive and innovative;

a city that is efficient, smart and reliable. Communities that are sustainable, healthy and built using universal design principles. Data that is actionable, transparent, shared and secure. Regulation of private providers that is guided by public benefits.

- **Task Force Recommendations Related to EVs include:**
    - Supporting investments in transportation infrastructure to meet City's mobility goals. Advancing transportation and mobility system that promotes the environmental health and sustainability and improves overall livability of the city.
    - Preparing Chicago for connected and autonomous electric vehicles. Assets, information and services (AIS): Bureau of Fleet Operations has 625 employees, 13 maintenance locations, 11 fuel sites and consolidated authority for all vehicle and equipment budgeting, acquisition, maintenance, repair as well as fueling and tracking.
    - City of Chicago's Green Fleet has ethanol, renewable natural gas, compressed natural gas, hybrid vehicles and battery electric type of vehicles.
    - Challenges include cost of vehicles, stations and installation, technical assistance to design for current and future needs, complexity of municipal fleet and product availability, as well as training workforce and drivers.
    - Opportunities include existing grants and infrastructure bill, internal contracts and joint purchase agreements, job order contracts and internal resources as well as new vehicles, outreach and training.
    - Alternative e-Mobility include divvy bike share which has currently 10,000 bikes and 800+ stations, hybrid dock and dock less system, E-bikes launched in August 2020 and over 5 million rides so far as of 2021. Other e-mobility programs include scooter sharing.

Discussion

- Q: Is the City looking at co-locating battery storage and solar at charging locations?
    - A: Yes, we have looked at solar. We have not been able to justify the cost benefit analysis with the portable units but with grants coming along and because technology is advancing it can become a competitive option.
- Q: Is the City looking at locating chargers at privately-owned land parcels? For example, it might be very cheap to install L2 charging on a privately-owned land parcel and team up w them for charging.
    - A: The public private partnerships we are very hopeful to begin working on. I would love to see for example zip cars, something similar to this with chargers. We may have to have some sort of priority charging to make sure employees can serve the public. As they are required to do. If there is a way to expand charging infrastructure that capacity exceeds everyone's user profile this will be a win for everyone. An opportunity is to have city facilities throughout the city to make it feasible to serve those who lack infrastructure and this will serve many policy goals.
- Q: How might the City collaborate with other public entities, e.g, parks, schools, public parking?
    - A: All of those options would be on the table. We are thinking about this in terms of the government fleet and for charging infrastructure for businesses and

residents throughout the city. Pulling together sister agencies and owners of other infrastructure is essential. The development of the electrification plan is one of the primary ways to do that. There is need for technical and strategy assistance. Yes to the question. This is one of the items utilities should be thinking about is going about it in a holistic way.

Nonresidential Rates and Incentives

Phil Jones, Alliance for Transportation Electrification (ATE)

- Utility programs should be developed as part of transportation electrification plans, developed with stakeholder input, filed for review by PUCs, and periodically updated. While a lot of attention has been focused on residential services rates, non-residential charging is critical as well. Proper rate design both short and long term is extremely important to ensure benefits of electrification are achieved.
- The goal of the ATE EV rate design task force is be proactive in state proceedings, do not play defense, find common ground with all stakeholders, including private EV charging companies. Context is that C&I rates which are applicable to public charging, including DC fast charging which is critical to alleviating range anxiety.
- The challenge is that public charging experiences leads to low utilization in these early years of EV adoption.
- The solution is to support market transformation, while observing cost of service ratemaking principles along with public policy.
- A useful document for commissioners, staff, and parties in state proceedings. Recognizes that each state and utility are different with unique precedent and rules for cost of service.
- A common denominator is that rates have to continue to meet the specific J&R standard and be sustainable over time.
- The goals of these principles are to retain cost reflective rates to the most extent possible recognizing at the same time public policy goals of increased electrification. Another goal is to support beneficial electrification by providing customer benefits such as fuel savings and incentives for off peak use, system benefits for all and positive environmental and public health benefits.
- Shifting and shaping EV load through rates and technology is key to achieving beneficial electrification. It is more difficult for non-residential charging depending on use case.
- Back to basics of ratemaking and Bonbright. Ratemaking principles should be technology agnostic. EV charging in not an exercise in the “utility of the future”. Use simply the traditional regulatory toolbox. Bonbright’s four principles: capital attraction function establishes revenue requirements to attract adequate investment.
- Efficiency incentive function is regulation that is intended to compel market like performance. Demand control function is scarcity, supply and demand, and it is also important to get the price signals right. Income distributive function can address with equity low income programs and incentives.
- Commercial rates are important for EVSPs because of four basic components of rates: fixed charge, volumetric commodity charge, demand charge and delivery charge. The solution is transitional relief.
- The concept is to offer a path to profitability by altering the demand charge component of rate structures on a temporary basics to help meet public policy objectives and better fit today’s public charging business models. The goal is to get us past this period of low utilization.

- Observations on MHD Vehicle use cases is that public transit uses overnight depot charging, likely a level 2 charger and pantograph charging en route. School bus vehicles use likely overnight charging, depends on vehicle routing and cycles.
- Business and usage models are developing. Small to medium sized fleets are Illinois or regionally based fleets, could be a combination of depot charging and public charging, as well as routing and accessibility concerns.
- Publicly accessible charging locations are defined as “publicly accessible”, utility planning and coordination here is important, make ready infrastructure such as rebates, could be a viable business model or utility ownership as option.
- Best practices emerging from utilities and fleets for MHD use cases are fleet planning services, TCO analysis, early site assessments, grid capacity issues, planning, availability of state and local government incentives and rate design issues.

Discussion

- Q: Can you describe some of the energy storage / renewable energy mechanisms and deployment timing tied to demand charge management and rate structures?
    - A: Electrify America and Tesla and some others are deploying on site energy storage, It is for demand charge mitigation. If we have folks coming into charge and going above a normal peak at that time, obviously we can draw from a storage device, the battery energy storage system. We can move from 50kW to 150kW to 250kW and some of the others are saying their cars are capable of 350kW charging. These sorts of solutions are really going to become important because of drawing power from the grid and utilizing time of use rates and dynamic pricing. Due to real time pricing when they can which is up to technology that the storage device can do. The other technology in a company called FreeWire is they actually build the battery and incorporate it into the EVSE itself, in hardware and software, their secret sauce is to integrate that solution to manage the demand chargers. If you have the ability to manage the demand charge through an integrated solution both in your hardware and software algorithm if you are looking at the feeder on a real time basis, is the other solution that is going to gain some traction.
- Comment: The rate limiter provision in Ameren Illinois' approved Corridor and non-Corridor Facility Charging programs is another good example of a delivery service demand mitigation approach to help reduce the impact of demand charges for low-load factor charging stations.
- Q: Could you please comment on whether/how a rate that shifts kW charges to kWh charges could work in IL where many commercial customers purchase energy from retail electric suppliers?
    - A: I’m not familiar with your retail energy suppliers in Illinois, and the terms and conditions of regulations. I think it is possible to work with a competitive RES supplier to do this, they would have to understand if they are in your area, in Northern Chicago, the PJM market, in real time ComEd and pricing rate and RGP that could be very beneficial to public transit fleets like yours. Yes, they could be able to do that, it’s just that just make sure that they understand this is a very complex area of rate making. If hit with the demand charge, at an unpredictable time, it’s painful for you as a customer, and so I would just go over that. The other thing is resiliency, on site storage can help, I think we’re going to see more extreme weather, over the next 5 years, and we are going to have more power outages unfortunately and all sorts of things such as flooding, so this resiliency issue is really important. I think for a transit operator as well as for

logistic providers everybody wants to be able to have that power back, as quickly as possible. I would advise that they have a resiliency plan or they have the ability to do back up power. There are lots of companies such as GENERAC that are moving into electric in a big way. Also there are lot of companies coming in providing electric backup power.

- Q: Can you say a bit more about the SMUD transitional relief structure?
    - A: I can provide more information if there is interest; this was a special rate that they developed. It was a very innovative rate, for IOUs and COUs. It is basically a way of trying to bring on site battery storages into the mix. Utilities helped to do this through infrastructure and rate design. SMUD is in the process of modifying their commercial rate, and demand charge. They tried something years ago and the EVSEs and customers did not like it, it didn't gain much traction. They are in the process of trying to devise a new kind of commercial C&I rate for EV charging right now. I will also send you something.
- Q: Have there been any states that have utilities that have modified its tariff to accommodate fleet or commercial EVSPs?
    - A: Yes, if you look at my slides and if you look at our rate design paper, we list like 15-20 examples of either an existing C&I rate that can be used for EV charging or some sort of modification of it like the Southern California energy rate, the economic development rate with a demand charge holiday. That was a special rate. The STGN San Diego gas electric rate was a clarification of an existing rate. So it is a combination of clarifying existing rates in their applicability to this and coming up with some new rates. All utilities were different, it is kind of a maze of tariffs for C&I customers that has developed over the years, and they are on file and approved by the commission. For example, EverSource in Massachusetts is part of this demand charge discount, they have like 15 or 20 different rates, that could apply to EV charging so what they are trying to do as part of this demand charge discount process is to simplify that. They are going to streamline, narrow and modify the rates and to clarify how they can be used for EV charging. I think it is utility by utility, where there is unnecessary complexity, in the existing C&I tariff structure. We all should try to streamline and clarify that.
- Q: Although the intent of electrification is GHG reduction, the focus seems to be on cost, rather than the actual CO2 reductions. Certain states or utilities offer generation portfolio that is far from sustainable. Do you have any thoughts on the cost/CO2 tradeoffs? Can/should rates factor that?
    - A: Rates under the Just and Reasonable Standard, they are not set up to deal with public policy or environmental choices. The traditional way of setting rates is to try to develop at least cost rate and a cheap rate if you will least cost, based on the generation side and the demand side. These cost tests have been modified over the years of course as more imperatives and more public policy, not dictates but requirements have been put on the commission, so in energy efficiency for example environmental attars, were given a 10% boost, or you have different ways of boosting a certain form of generation. The commissions if we are talking about rate design today, it is very important I think to keep the commission in its rate making process out of those decisions because those are very political decisions that have a lot of public policy in them. Once they make their decision, on the generation mix, on demand side management solutions versus generation solutions, how much transmission is needed to get generation to load and who might pay for that. Once those decisions are made the commission is well set up using the regulatory toolbox to deal with these sorts of things. Obviously, the commission has to do it in a different way. It has to be

based on evidence and ex-parte rule supply and all of the things to try to guarantee a fair outcome.

Addressing Health and Pollution Impacts

Negative Impacts: UIC Life Cycle Emissions Study

Dr. Steffen Mueller, University of Illinois Chicago

Key study components

- **Commonly Used Models:**
  - Environmental Protection Agency AVERT Model, Environmental Protection Agency eGrid Database, Department of Energy GREET Model and EPA MOVES model. Life cycle emissions modeling of different vehicle and fuel technologies: consider transmission loss, upstream emissions include fossil fuel extraction.
  - Life cycle greenhouse emissions assessments, criteria pollutants are NOx, Sox, PM, Sulfur and Aromatics. EVs include power plant emissions plus upstream, tire and break wear emissions, Liquid fuels include refining emission plus upstream, tailpipe emissions as well as tire and break wear emissions.

- **Metro Chicago vs. Rural Illinois**
  - The difference is that the metro Chicago has a cleaner grid mix aggregated than rural Illinois. In the metro Chicago area, ethanol, hybrid and EVs lead to less emissions than gasoline. In rural Illinois all EVS have significantly less gas emissions than gasoline vehicles.

- **Pollutants and Environmental Equity**
  - EVs provide less benefits on highway driving cycles. The comparison of life cycle GHG emissions across vehicle types can depend heavily on the type of driving the vehicle will do.

- **Conclusions**
  - EVs and biofuels technologies provide significant GHG savings over gasoline vehicles, GHG savings from EVs depend on carbon intensity of incumbent electricity grid. GHG grid carbon intensity varies between northern IL and rest of the state. In rural area hybrid technologies and especially hybrids with biofuels provide significant GHG benefits.
  - There is an urgency to reduce PM 2.5. The deadly air pollutant harms Americans of color. Calibration over Chicago is used to determine dispersion from mobile sources. Highest concentration of tailpipe PM and Air Toxins within .2 miles on line source.
  - Tailpipe PM emissions settle close to lime source. Population next to major roadways are over proportionally exposed to pollutants. EV and Biofuel vehicles can reduce toxic emissions from particulate matter and aromatic hydrocarbons.
  - The difference in electricity regions is significant in Illinois. Pollution intensity is higher in central and southern grid vs Northern grid region including metro Chicago. The difference in urban vs rural population is that in Chicago, over proportional concentration of minority population groups live near expressways. Clean fuels reduce criteria pollutants next to expressways.

Illinois City Impacts: Benefits of Electrification

Angela Tin, American Lung Association and Chicago Area Clean Cities

- **Highlights of 2020 study on health benefits of electric vehicles**
  - Air pollution remains a major danger to the health of children and adults. It affects healthy people as well. It is linked to a multitude of illnesses such as diabetes and dementia. COVID-19 and air pollution: there was an increase in air pollution in relation to hazardous air pollutants.
  - The baseline air pollution for global particulate matter was particulate matter and there was an increase in both U.S particulate matter and nitrogen dioxide. There was an 11% increase in the COVID mortality rate as it relates to particulate matter, and a 16.2% increase in COVID mortality rates as it relates to nitrogen dioxide.
  - The road to clean air starts with the fact that there are benefits of a nationwide transition to electric vehicles. “The Road to Clean Air” highlights the potential for major public health and climate change benefits of widespread electrification of the transportation sector.
  - The state of air in 2020 was that American living in counties were failing in 3 grades. Ozone days, particle days and annual particle levels. Also people of color experienced this at higher rates than white individuals.

- **Impacts on Illinois cities**
  - Electric vehicle scenario: 100 percent zero emission vehicle sales by category. National scenario focused on deployment of zero emission technologies across the transportation sector, with sales in ten classes of vehicles ramping up to 100 percent. By 2025, there will be school buses, transit buses and airport shuttles that will be EVs.
  - By 2040, there will be passenger cars, delivery vans, refuse trucks and short haul tricks that will be EVs. By 2045, there will be long haul trucks, and port trucks that will be EVs. This projection is based on a scenario that will be the national outlook of vehicles in upcoming years.
  - The health benefits of avoided emissions in 2050 are $72 billion in health benefits due to emission reductions in 2050. 6,300 premature deaths will be avoided, 93,300 asthma attacks will be avoided and 416,000 lost work days will be avoided.
  - Climate befits of avoided emissions in 2050 is that $113 billion in climate befits due to emission reduction in 2050, 1.5 billion metric tons of CO2e be decreased. State level results due to emission reduction in 2050, are that Illinois health benefits of $3.2 billion of benefits and health impacts, and in Chicago specifically $2.9 billion.

Discussion

- Comment: 2020 Illinois air quality report released yesterday by the IEPA: https://www2.illinois.gov/epa/topics/air-quality/air-quality-reports/Documents/2020AnnualAirQualityReport-Final.pdf
- Q: Are the 2050 benefits cumulative or in that year alone?
  - A: In that year alone, that is what the model is projecting on a yearly basis.
- Q: Do you have any info on the local vs. regional changes in PM and NOx emissions when switching from ICE vehicles (tailpipe emissions) to EVs (power generation emissions)?

- A: No, it did not drill that far down. It was a quick study that was done in advance of the EV movement.

Low Income Community Impacts

Jose Acosta, Little Village Environmental Justice Organization; Yana Kalmyka and Madison Lisle, Warehouse Workers for Justice

- **Introduction, Background and Community Impacts**
  - Important to recognize we are on indigenous lands.
  - The Little Village Environmental Justice Organization was founded in 1994. It fights for environmental justice and against environmental racism in Chicago. It advocates for the self determination of immigrant low income and working-class families. The vision is to build a sustainable community that promotes the healthy development of youth and families that provides economic justice, and practices participatory democracy and self-determination.
  - The Warehouse Workers for Justice was founded in 2007, it is a worker's center for fighting for stable and safe family sustaining jobs in Illinois' warehousing and distribution industries. They work primarily in Joliet and other working-class south suburbs to demand worker and environmental justice from the powerful warehouse industry for working families living in Will county.
  - The Intermodal railyards (Chicago) is the freight hub of North America. It has 6 out of 7 class 1 railroads converge; this is where the eastern railroads meet the western railroads. It is Chicago's most direct connection to global trade and is primarily located in low income and communities of color. The vast majority of these intermodals are located in communities that are predominantly BIPOC.
  - Warehouse distribution centers, logistics hubs locate near these intermodals. Maps showing concentration of these facilities in our communities.
  - There is a disproportionate impact of medium and heavy-duty truck traffic. Electrification of medium and heavy-duty vehicles should be concentrated in port adjacent and environmental justice communities. Port adjacent communities need to be prioritized.
- **Health Impacts**
  - NRDC maps shown in slides – to determine where the most cumulative burden exists. Also shared a map created by the Chicago Dept. of Health in 2020. Both maps highlight that pollution is more of a concern in the City's communities of color.
  - Asthma prevalence by census tract + identified warehouses
    - Asthma prevalence is extremely high in the south side of Chicago, including Joliet area
    - Statewide average for asthma prevalence = 9.9%; in south side of Chicago asthma is in the medium and upper ranges
    - Data for asthma prevalence is incomplete; it only reflects diagnoses. Many people in our communities cannot access healthcare due to immigration status or financial barriers.
    - Communities are made vulnerable by industries
  - Little Village Neighborhood
    - Largest Mexican neighborhood in the Midwest
    - Over 1,000 business and 160 restaurants
    - Neighborhood deals with significant industrial pollution
    - Second worst air quality in the state of IL

        - I&M canal was built in 1848; this was fundamental to Chicago's growth because it connected Lake Michigan to the Mississippi river. Replaced in 1900 by the Sanitary and Ship Canal. There is over a century of industrial pollution in the area.
        - Example of Hilco – Exchange 55/Target Distribution Warehouse and effort to stop it. Little Village already suffers from significant truck traffic and poor air quality.
        - Electrified fleet will minimize air pollution impacts on the community.
        - Little Village is among the communities that should be prioritized for electrification of medium and heavy-duty vehicles.
    - Joliet, Illinois
        - Vital to the logistics industry; intersection of major highways and major railroads.
        - Home to Centerpoint Intermodal Center (Elwood, IL) – this attracts thousands of trucks every day.
        - WWJ launched a community led air study this summer, with stationary air monitor placements. We saw levels of diesel pollution skyrocket this summer.
        - We have been talking to the community about impacts that medium and heavy-duty trucks. The companies that treat workers poorly are the same ones that have trucks on the road.
        - Quote from a community leader talking about our air study-> We are exploring the impacts of diesel trucks and the air pollution they cause. "They travel along the communities very close to parks close to schools and people are being affected by the air pollution. If it continues to go at the rate it is going without measures to control air pollution, it can become a very big issue" as said by Ericka Gonzalez-Guzman from the WWJ environmental justice committee.
        - Frontline exposure to diesel pollution is a mixture of over 40 toxic chemicals smaller than a human hair, workers performing hard labor can breathe diesel pollution deep into their lungs and their bloodstream.
        - Health effects of diesel pollution are headaches, coughing, nausea, and irritation of the eyes. Long term effects are lung cancer, heart disease, stroke, and allergies.

- **Labor Considerations**
    - Warehousing companies often justify their pollution by arguing that they bring jobs to the communities but these jobs tend to be low paying, unstable, and unsafe.
    - One of the most important ways we can support communities living close to ports warehouses and intermodals is to find ways to use the electrification process to promote transparency surrounding labor standards across the entire supply chain.
    - Port communities need to be one of the first places where electrification for medium and heavy-duty vehicles happens. Our communities want to see benefits as a result of electrification.
    - There is a general mistrust of electrification by fleet owners, as something unfamiliar, and new, and could make their jobs more difficult if it's done wrong.
    - Labor practices in the warehousing industry

        - Warehousing was the second hardest hit industry by COVID in the entire state. Provided example of how warehouses and distribution centers are often laid out, with subcontractors and third-party logistics companies. This drives down industry wages, discriminates against employees. Also used to bypass environmental regulation.
        - The many flaws of the industry were highlighted by the COVID pandemic as investigated by WWJ's COVID jungle report which found that 50% of responding warehouse workers were uninsured. 96% received no hazard pay during the pandemic, almost all respondents made less than $20 hour and $56 made less than $15 hour.
        - Increasingly permanent "temporary" work model disproportionately harms Black and Latinx workers who account for 85% of temp workers in Illinois factories and warehouses despite the state's overall workforce being only 35% non-white.
        - Truck drivers whose jobs will be directly impacted by the transition to electric fleets are also facing workplace issues. Today, drivers get paid about 40% less than they did in the late 1970s, but are twice as productive as they were then. Need to be building trust with truck drivers and small fleet companies.
- **Summary of Recommendations**
    1. Prioritize medium and heavy-duty electrification in working class communities of color living by ports, warehouses and intermodals.
    2. Use the electrification process as an opportunity to address compounding issues of pollution and poor working conditions by promoting transparency of labor practices for participating EV manufacturers and private purchasers.
    3. Working with groups on the ground to tap into community expertise.

Discussion

- Comment: The Chicagoland area is a day's haul from 60% of the continent, making it a vital location for warehousing and logistics operations.
- Q: Is there a quality/fair labor certification or standard that helps us identify who the firms that are sustainably supporting their workforces?
    - A: We collaborated with Jobs to Move American to propose a voucher program. This will be presented at the Jan. 12th Workshop meeting. I have a long list of what it means to ensure fair workplace conditions in the electrification process; happy to share directly, sharing email in the chat.
- Additional Comments:
    - Very powerful presentations.
    - Excellent presentation on really critical issues. I urge the ICC to take up those recommendations and take these labor and equity issues seriously.
    - Thank you LVEJO and WWJ for the research and pushing forward area concerns. It's imperative to make sure that there is equity, good, safe jobs and companies that are good community participants for our area.

Attendees

Celia Johnson, Facilitator
Stephanie Okiro, Assistant Facilitator
Aaron Holton, City of Geneva
Al Walker, Windsor Park Evangelical Lutheran Church
Alba Valbuenaguerra, ComEd

Ali Clunk, Edison Energy
Alvyn Walker, Leave No Veteran Left Behind
Andrew Barbeau, The Accelerate Group
Andrew Cottrell, Applied Energy Group
Andrew Olsen, Village of Carol Stream
Angela Tin, American Lung Association and Chicago Area Clean Cities
Angie Ziech-Malek, DNV
Anthony Brown, Ameren Illinois
Antonio L. Krulas, Patrick Engineering
Bart Sowa, Gas Technology Institute
Ben Wiberg, Village of Glenview
Beth Sundman, City of Polo
Bill Reany, Ameren Illinois
Brad Maggi, Village of Skokie
Brian Cuffle, Ameren Illinois
Brian Urbaszewski, Respiratory Health Association of Metropolitan Chicago
Brice Sheriff, Ameren Illinois
Bryan Pemble, ICC
Caroline Quazzo, ComEd
Cassandra Hadwen, Greater Chicago Legal Clinic and Chicago Environmental Justice Network
Chad Kruse, Illinois Dept. of Energy
Cheryl Scott, Metropolitan Mayors Caucus
Chip Tenorio, ComEd
Chris Townsend, CJT Energy Law
Christopher Boggs, Illinois Attorney General's Office
Christopher Schmidt, Illinois Department of Transportation
Chris Vaughn, Nicor Gas
Cliff Haefke, Energy Resources Center (ERC), University of Illinois at Chicago
Cole Jermyn, Environmental Defense Fund
Corey Padgett, PACE
Catharine Alias, CNT
Daniel Levinson, Village of Glenview
Dave Schaller, NACFE
David Raila, PACE
Dianna Trost, ICC
Doug Sullivan, PACE
Drew Hepler, Truck Country
Barry Frazier, Ameren Illinois
Edith Makra, Metropolitan Mayors Caucus
Elizabeth Kocs, UIC Energy Initiative
Elizabeth Stein, Environmental Defense Fund
Eric Lounsberry, ICC
Francesca Wahl, Tesla
Gary King, EV Alliance
Geoffrey Grammer, Ameren Illinois
Grant Snyder, Illinois Attorney General's Office
Ivy Klee, Kane County IL
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Jack Jordan, Advanced Energy Group Chicago
Jared Policicchio, Mayor's Office, City of Chicago
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James Harmening, ICC
Jamie Hall, GM
Jason Navota, Chicago Metropolitan Agency for Planning
Jason Verner, The NorthBridge Group
Jena Ginsburg, ChargePoint
Jennifer Morris, ICC Staff
Jessica Beverly, Sierra Club
Jenna Maurer, ICC
Jim Longino, Greater Southwest Development Corporation
Jim Zolnierek, ICC
Joe Alonzo, City of Chicago
Joe Duffy, Company Not Known
Joe Levy, Energy Resources Center, University of Illinois Chicago
John McCann, ComEd
John Truckenbrod, EV Energy Group
Jonah Berg-Ganzarain, Chicago Clean Cities
Jose Acosta, Little Village Environmental Justice Organization (LVEJO)
Josh Cohen, Greenlots
Julie Soderna, Citizens Utility Board
Justin Wilson, ChargePoint
Karen Young, Village of Roselle
Karla Stepter, Johnson, Blumberg & Associates
Kate Tomford, CTA
Katherine Stonewater, IL Dept. of Commerce and Economic Opportunity
Kelly Aves, ICC
Kelly Turner, ICC
Ken Crowley, Village of Oak Park
Kerylyn Goldwyn, Edison Energy
Kevin Johnson, GlidePath
Kevin Campbell, City of Chicago
Kevin Chen, ComEd
Kevin Happ, ComEd
Kim Ehrenhaft, NACFE
Kinshuk Chatterjee, Center for Sustainable Energy
Karen Petersen, TNC
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Kyra Woods, City of Chicago
Larissa Koehler, Environmental Defense Fund
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Matt Ott, MidAmerican Energy
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Ryan Gallentine, Advanced Energy Economy
Ryan Robertson, Lueders, Robertson & Konzen
Salvatore Tralongo, Carbon Solutions Group
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Sarah Moskowitz, Citizens Utility Board
Scott Hilts, Village of Round Lake Beach
Scott Fisher, Greenlots
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Tyler Sellner, Opinion Dynamics
Valeria Rincon, NRDC
Vanessa Perkins, Community Charging
Victoria Nielson, Applied Energy Group
Vincent Westfallen, ComEd
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Will Kenworthy, Vote Solar
William Koehl, City of Batavia
Yana Kalmyka, Warehouse Workers for Justice
Yann Kulp, elQ Mobility